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LOO, JUVENA W				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,987

Applicant(s)

SUDO, HIROAKI

Examiner

JUVENA LOO

Art Unit

2616

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18, 19, 21-25 and 27-33 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 19, 21-25, 27, and 30-33 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Objections

1. Claim 27 is objected to because of the following informalities: claim 27 is dependent on claim 26. However, claim 26 is not defined. Appropriate correction is required.
2. Claims 20 and 26 are missing or not defined.
3. Claim 30 is incomplete.

Claim Rejections - 35 USC § 112

4. Claim 30 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
5. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 18, 21, 28, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerlach et al. (US 6,628,723 B1) in view of Mody et al. (US 2002/0181509 A1).

Gerlach et al. discloses systems and methods for precisely controlling the amount of redundancy introduced by a turbo encoding process comprising the features:

Regarding claim 18, Gerlach discloses *a transmitting apparatus* (Gerlach: see Figure 2) *comprising:*

a coding section that encodes a transmit signal and outputs systematic bit data and parity bit data (Gerlach: see Figure 2, Turbo Coder 500 and "FIG. 2 depicts a transmitter 200...adds parity bits" in column 4, line 53 through column 5, line 5);

Gerlach does not explicitly disclose the features comprising:

an insertion section that inserts a first guard interval in the systematic bit data and inserts a second guard interval in the parity bit data; and

a control section that sets a length of the first guard interval larger than a length of the second guard interval.

Mody et al. discloses a wireless Orthogonal Frequency Division Multiplexing (OFDM) communication system comprising the features:

an insertion section that inserts a first guard interval in the systematic bit data and inserts a second guard interval in the parity bit data (Mody: see Figure 3, Cyclic Prefix Inserter 40 and see Figure 4; see also "The output from the IDFT...thereby eliminating ISI" in page 4, section 0048; Mody discloses that cyclic prefixes, serve as guard intervals, are added separately to the two output data sections); and

a control section that sets a length of the first guard interval larger than a length of the second guard interval (Mody: see "the step of producing a frame...improving synchronization" in page 13, claim 49; Mody discloses that two different guard intervals with different lengths are assigned to each section).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gerlach, by using the feature, as taught by Mody, in order to improve or eliminate Inter Symbol Interference (ISI) (Mody: see page 4, section 0048).

Regarding claim 21, Gerlach discloses *further comprising an allocation section that allocates the systematic bit data and the parity bit data to different symbols* (Gerlach: see Figure 2, Turbo Coder 500 and "FIG. 2 depicts a transmitter 200...adds parity bits" in column 4, line 53 through column 5, line 5; see also Figure 4) .

Regarding claim 28, Gerlach discloses *further comprising:*

a spreading section that performs spreading processing on the systematic bit data and the parity bit data (Gerlach: see Figure 2 and "FIG. 2 depicts a transmitter...frame to be filled" in column 4, line 53 through column 5, line 30); and

a multiplexing section that code multiplexes the systematic bit data and the parity bit data subjected to spreading processing (Gerlach: see Figure 2 and "FIG. 2 depicts a transmitter...frame to be filled" in column 4, line 53 through column 5, line 30), *wherein said insertion section inserts the first guard interval and the second guard interval in the code multiplexed systematic bit data and the parity bit data* (Gerlach: see Figure 2 and "FIG. 2 depicts a transmitter...frame to be filled" in column 4, line 53 through column 5, line 30).

Regarding claim 31, Mody discloses *a base station apparatus comprising the transmitting apparatus according to claim 18* (Mody: see Figures 1, 12, 14, 16, and 18).

Regarding claim 32, Mody discloses *a communication terminal apparatus comprising the transmitting apparatus according to claim 18* (Mody see Figures 1 and 8).

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerlach et al. (US 6,628,723 B1) in view of Mody et al. (US 2002/0181509 A1) and further in view of Diepstraten et al. (5,422,887).

Gerlach and Mody disclose all the limitations as in paragraph 7 above. Gerlach and Mody do not disclose the feature comprising: regarding claim 19, *wherein said control section lengthens the first guard interval and the second guard interval in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data.*

Regarding claim 19, Gerlach and Mody disclose *wherein said control section lengthens the first guard interval and the second guard interval* (Mody: see "The cyclic prefix inserter 40 repeats G...thereby eliminating ISI" in page 4, section 0048). In other words, Mody discloses a method of increasing the length of the guard interval to ensure

that the time delay of transmitting a signal across a channel does not exceed the guard interval and that the increasing the length of the guard interval according to the delay of a transmitted signal across the channel.

Diepstraten et al. discloses a method to improve access fairness while reducing the collision probability in a wireless local area network comprising a relation between the number of retransmission attempts and the backoff time which, in turn, is an integral number of slot time that is configurable and normally based on the maximum end to end round trip delay time of the network (Diepstraten: see "The dynamics of collision handling are...after each retransmission attempt" in column 4, lines 42 – 63). In other words, Diepstraten et al. discloses how the end to end delay time is related to the number of retransmission.

Therefore, the combination of Gerlach, Mody and Diepstraten et al. disclose the claimed feature: *wherein said control section lengthens the first guard interval and the second guard interval in accordance with an increase in a number of retransmissions of the systematic bit data and the parity bit data* (Mody: "The cyclic prefix inserter 40 repeats G...thereby eliminating ISI" in page 4, section 0048; and Diepstraten: "The dynamics of collision handling are...after each retransmission attempt" in column 4, lines 42 – 63).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gerlach with Mody by using the feature, as taught by

Diepstraten et al., in order to increase data throughput in the network by improving access fairness while reducing collision probability (Diepstraten: see Abstract).

9. Claims 22 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerlach et al. (US 6,628,723 B1) in view of Mody et al. (US 2002/0181509 A1) and further in view of Sudo (EP 1014639 A2).

Gerlach and Mody disclose all the limitations as in paragraph 7 above. Gerlach and Mody do not disclose the feature comprising: regarding claim 22, *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to delay distribution information*; regarding claim 23, Sudo discloses *wherein said delay distribution information is transmitted from a communicating party*; regarding claim 24, Sudo discloses *further comprising a detection section that detects said delay distribution information from a received signal*.

Sudo discloses an OFDM transmission/reception apparatus with selection of optimal guard interval length comprising the features:

Regarding claim 22, Sudo discloses *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to delay distribution information* (Sudo: see "The OFDM transmission/reception

apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

Regarding claim 23, Sudo discloses *wherein said delay distribution information is transmitted from a communicating party* (Sudo: see "The OFDM transmission/reception apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

Regarding claim 24, Sudo discloses *further comprising a detection section that detects said delay distribution information from a received signal* (Sudo: see "The OFDM transmission/reception apparatus...transmission signal and transmitted" in page 7, section 0058 through page 8, section 0069).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gerlach with Mody by using the feature, as taught by Sudo, in order to improve transmission efficiency (Sudo: see page 4, section 0028).

10. Claims 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerlach et al. (US 6,628,723 B1) in view of Mody et al. (US 2002/0181509 A1) and further in view of Kostic et al. (US 6,885,630 B2).

Gerlach and Mody disclose all the limitations as in paragraph 7 above. Gerlach and Mody do not disclose the feature comprising: regarding claim 25, *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to a transmission time interval*; regarding claim 27, Kostic discloses *wherein said control section makes the length of the first guard interval and the length of the second guard interval larger in proportion as a ratio of said used band to a band whose use is permitted is smaller.*

Kostic discloses an efficient method for providing both dedicated and simulcast services over a common wireless infrastructure comprising the features:

Regarding claim 25, Kostic discloses *wherein said control section sets the length of the first guard interval and the length of the second guard interval according to a transmission time interval* (Kostic: see "Guard times allocated for dedicated...simulcast and dedicated services" in column 4, lines 35 – 55; see also "a method for use...dedicated information" in column 7, line 49 through column 8, line 18; Kostic discloses assigning different guard intervals to different type of data bits).

Regarding claim 27, Kostic discloses *wherein said control section makes the length of the first guard interval and the length of the second guard interval larger in proportion as a ratio of said used band to a band whose use is permitted is smaller*

(Kostic: see "Guard times allocated for dedicated...simulcast and dedicated services" in column 4, lines 35 – 55; see also "a method for use...dedicated information" in column 7, line 49 through column 8, line 18; Kostic discloses assigning different guard intervals to different type of data bits).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gerlach with Mody by using the feature, as taught by Kostic, in order to maximize throughput of the system (Kostic: see column 8, lines 40 - 45).

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (US 2002/0181509 A1) in view of Gerlach et al. (US 6,628,723 B1).

Regarding claim 33, Mody discloses *a guard interval setting method* (Mody: see Figure 3, Cyclic Prefix Inserter 40 and see Figure 4; see also "The output from the IDFT...thereby eliminating ISI" in page 4, section 0048; Mody discloses that cyclic prefixes, serve as guard intervals, are added separately to the two output data sections) *comprising:*

a step of inserting a first guard interval in the systematic bit data and inserting a second guard interval in the parity bit data (Mody: see Figure 3, Cyclic Prefix Inserter 40

and see Figure 4; see also "The output from the IDFT...thereby eliminating ISI" in page 4, section 0048; Mody discloses that cyclic prefixes, serve as guard intervals, are added separately to the two output data sections); *and*

a step of setting a length of the first guard interval larger than a length of the second guard interval (Mody: see "the step of producing a frame...improving synchronization" in page 13, claim 49; Mody discloses that two different guard intervals with different lengths are assigned to each section).

Mody does not explicitly disclose the feature comprising:

a step of coding a transmit signal and outputting systematic bit data and parity bit data.

Gerlach et al. discloses systems and methods for precisely controlling the amount of redundancy introduced by a turbo encoding process comprising the feature:

a step of coding a transmit signal and outputting systematic bit data and parity bit data (Gerlach: see Figure 2 and "FIG. 2 depicts a transmitter...frame to be filled" in column 4, line 53 through column 5, line 30);

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Mody by using the feature, as taught by Gerlach, in

order to control the amount of redundancy introduced by a turbo encoding process (Gerlach: see Abstract).

Allowable Subject Matter

12. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 29, the prior arts do not disclose the feature: wherein a spreading ratio of said spreading section is made "1" and a code multiplexing number of the systematic bit data and the parity bit data is made "1 ."

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUVENA LOO whose telephone number is (571)270-1974. The examiner can normally be reached on Monday - Friday: 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUVENA LOO/
Examiner
Art Unit 2616
September 12, 2008

/Kwang B. Yao/
Supervisory Patent Examiner, Art Unit 2616